Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

DANISH WEST INDIES.

Quarantine against Demerara replaced by quarantine inspection.

The following is received from Minister Swenson, at Copenhagen, under date of April 18:

Quarantine by the Danish West Indies against Demerara, reported in my dispatch of May 29, 1903, was raised on March 9. Ships arriving from that place must, however, submit to a quarantine inspection.

Quarantine against the Grenadines raised.

The following is received from minister at Copenhagen under date of April 27:

The quarantine against the Grenadines, which formed the subject of my dispatch of May 6, 1903, was raised on February 25, 1904.

ECUADOR.

Report from Guayaquil—Inspection of vessels—Yellow fever—Mortality statistics.

Acting Assistant Surgeon Gruver reports, April 4 and 9, as follows:

During the week ended April 2, 1904, a total of 67 deaths were recorded as follows: Yellow fever 7, tuberculosis 7, pernicious fever 11, infectious fever 1, fevers without classification 12, from all other diseases 29.

The steamship *Manavi*, a coasting steamer, cleared from this port on April 2, for Panama, via other ports. There were on board 6 officers, 39 crew, 27 cabin, and 8 steerage passengers; all told 80.

During the month ended March 31, 1904, the total mortality in this city was 312, of which 39 deaths were from yellow fever and 28 from tuberculosis. For the same period last year there were 358 deaths recorded, of which 47 were from yellow fever and 35 from tuberculosis.

Present officially estimated population, 60,000.

Extracts from cable messages received by the governor of this province from the Ecuadorean diplomatic representatives in Chile and Peru relative to bubonic plague.

Lima—April 4, last two days, 4 cases, 2 deaths; April 4, yesterday, one case in city, other on farm near; rumor from Santiago says 3 cases in Iquique; April 4, actually existing in hospital, 33; of these, 9 serious; April 4, 7 mild and 16 convalescent; April 6, last two days, 4 cases.

Santiago de Chile—April 7, suspicious epidemic Antofogasta, believed to be plague; April 7, yesterday, 2 cases, 1 suspicious, 2 dead; notice from Antofogasta, 40 cases of plague officially reported there. Confirmed also in Iquique.

Health and sanitary condition of Guayaquil and vicinity—Yellow fever epidemics.

The following is received from Acting Assistant Surgeon Gruver under date of April 4, 1904:

The certainty of the completion of the isthmian canal gives to Guayaquil a position, from a sanitary standpoint, not possessed a few years ago. She becomes an important factor in all that concerns the sanitation of the canal zone and one which must be dealt with intelligently in order to obtain the desired results on the Isthmus. Her commercial importance, which brings her in frequent communication with the Isthmus, only 700 miles distant, is already great and with the opening of the canal will rank her of first importance among the cities on the Pacific side of South America, among which she now ranks third after Valparaiso and Callao.

Guayaquil has a harbor thoroughly protected from storms, where the deepest draft vessels can safely anchor. It is the gateway to a vast expanse of fertile territory, which produces cocoa, rubber, ivory nuts, coffee, sugar, hides, and Panama hats, which by an excellent system of rivers and natural canals is brought into easy communication. It exports 30 per cent of the world's supply of cocoa; is the terminus of the Guayaquil and Quito Railroad, an American corporation, which is now operated over 112 miles of territory to Guamote, and when completed will open up 240 miles of rich and fertile upland territory, entirely cultivated and thickly populated by natives and foreigners who, with improved facilities of communication and transportation, will become large consumers of foreign manufactures and producers of food stuffs, wool, etc., and finally Guayaquil, under the most adverse conditions of repeated visitations of great epidemics and fires, has increased her population over 80 per cent within the past twenty years.

For this reason I have studied very carefully the health and sanitary conditions of this city and the surrounding territory, that this report might be complete and convey a true picture of the conditions which exist here. With this object in view I have studied the history of this section in so far as it influences the present condition; the commerce and commercial intercourse with the surrounding territory and neighboring Republics, with the consequent effects on the sanitary history of the Ecuadorian coast; the diseases which have prevailed and those which do prevail at present throughout this territory; together with an investigation of the river system and railroad and steamship lines here. In all, I have merely stated facts without attempting to draw deductions.

Much space has been given to the sanitary history of the river villages tributary to this city, the climate, humidity, rainfall, and prevailing winds of this section, because they all form integers in the consideration of Guayaquil's sanitary condition which can not be ignored. Finally I have, in mentioning the diseases, devoted a great part of this report to a study of the history of yellow fever in Ecuador, because in it is traced an exotic disease brought in by commercial intercourse, appearing for a time in epidemic form and then becoming endemic.

Throughout I have received valuable information and assistance from the various government officials here, and to Dr. Cesar Borja, president of the municipality, Señor Antonio Gil, chief of police, who is also the official registrar, and Col. Francisco Fernandez Madrid, captain of the port, I am especially indebted for assistance and information, without which this report would be incomplete.

Guayaquil is situated on a peninsula, 82° 11′ 33″ west longitude (Paris) and 2° 11′ 25″ south latitude, in an extensive bottom of marshy formation, with the Guayas River on the east and the Estero Salado (Salt Creek) on the west. It is about 50 miles from the ocean.

A series of hills extends from east to west and limits the growth of the city on the north. On the east it is about 2 feet above the level of the sea, while on the west many parts are either on a level with the Estero Salado, or lower. In this way vast expanses of inundated and marshy swamps exist right at the edge, while a luxuriant and rank growth of mangroves almost hedges in the city on the south and west. The area of the city is about 3 miles from Las Peñas, the extreme northern part, to the southern extremity, and 2 miles from the Guayas River to Estero Salado, along the Calle Nueve de Octubre.

From its position, its altitude and latitude, we should expect a very warm, uncomfortable climate, but many things unite to make it otherwise.

The seasons.—There are two very definitely marked—the wet and the dry. What is spoken of as winter is really the hot season, and extends from the middle of December to May. It is more correctly the wet season, while summer is the cool and dry season, and extends from May to December. Doctor Wolf, in his history of Ecuador, gives the mean yearly temperature at 27° C. This, however, varies considerably during the wet (winter) and dry (summer) seasons.

Only once in the history of Guayaquil has the thermometer registered less than 19° C. That was in October, 1892, when grippe was epidemic here, when at 4 o'clock in the morning the thermometer registered 18° C. In the wet (winter) season as high as 35° C. is registered, but very rarely. It frequently, however, reaches 33° C. between 3 and 4 o'clock in the afternoon. This is the hottest hour of the twenty-four.

In June, July, and August, the coolest months (midsummer), the mean temperature is 25.5° C., while in December, January, and February (midwinter) it is 28° C.

The river water registers in summer (dry season) 27° C., in winter (wet season) 28° C.

The temperature of Guayaquil is influenced by the sea breezes and by what are known here as the Chanduy winds. These winds come from the direction of a little village of that name, and are very cool. The prevailing winds for the seven months of the dry (summer) season are from southwest to northeast. They commence about 3 p. m. and continue to midnight. From the middle of December to May the winds are from the north. During the wet (winter) season it rains almost continuously. It is then that yellow fever increases, as well as malaria. This does not bear out the observation made in Vera Cruz by working party No. 1 of the Public Health and Marine-Hospital Service, that when malaria increases yellow fever decreases. During this season the streets in four-fifths of the city and all the surrounding territory are veritable slush ponds.

The yards become lakes and water is everywhere. Mosquitoes become a veritable pest. When this season closes and the rains stop, these pools, subjected to the direct rays of a hot tropical sun, become stagnant, and are converted into excellent breeding places for mosquitoes. They were so when I first arrived, about the end of the wet season this year. It is a fact very generally commented on here that this has been the shortest wet season (winter) known, the rains having ceased about the middle of February. During the dry or summer season no rain falls, and the city becomes dry again within six weeks or two months. From January to April the sky is generally cloudy;

May and June are much clearer, but a thick cloud rests on the horizon at sunrise and sunset. From July to December the days and nights are perfectly clear.

It has been observed here that the years of greatest sickness always follow the severest wet (winter) seasons.

Barometric pressure is almost invariable. The daily amplitude difference between maximum and minimum is never over four millimeters, and rarely that. Storms and hurricanes are unknown, also cyclones.

Guayaquil of to-day is not the same as Guayaquil of ten years ago. Successive great fires have visited the city and changed its appearance. Contrasting the unburned district with the new or rebuilt section, it can not be denied that the visitation of fire has done much to improve this city in every way.

Thus the city presents the appearance of two distinct towns in one. The new or rebuilt section with broad, raised streets, for the most part well paved and partially drained; the houses large, well built, and with excellent accommodations for light and ventilation, and supplied with water-closets and baths.

The old part, with crooked, narrow, and ill-paved streets, is, for the greater part, without sewers. The houses are poorly ventilated and overcrowded, and offer every facility for the propagation of disease. In these there is almost a total absence of modern water-closets.

Again there is another part of Guayaquil which is altogether unhealthful, insanitary, and filthy. This third section is on the outskirts of the city. The streets are low, without an attempt at sewerage, and with many stagnant pools. The houses are poorly built, insanitary, and in great part overcrowded and dirty. The roofs are covered with cadi, a kind of palm which becomes the abiding place of various insects. The lots are all below the street level.

In this section most of the houses are built on piles about 6 feet from the ground. Under these, pigs, horses, cows, and fowls are kept. The principle of construction of the houses is the same throughout the city. The framework is covered on the outside with split bamboo instead of boards, used very much as laths are used in the United States. Over this is spread a coat of quincha, a kind of mortar made of stable manure, straw, and clay. In the better class of houses this is covered by a coating of lime, but in the greater number nothing is added. In a large majority of the houses of the unburned territory, and all in that section of which I have spoken as the outskirts of the city, even the quincha is left off and the bamboo strips alone are used.

The houses are built with patios in the center and piazzas on the street. These piazzas are inclosed, but supplied with large double latticed doors. Thus no house is protected from the ingress of mosquitoes. In the better class of houses modern water-closets are used, connected with a sewerage system, which I shall describe under the head of sewers. By far the greater number of houses have no such accommodations. The excreta is collected in barrels. These are conveyed by flat cars, over the "carros urbanos" (street railway) to the Malecon and loaded on canoes, by which they are conveyed down the Guayas River, into which they are dumped when the tide is running out. This is a private enterprise, working under municipal regulations. I do not believe that even this is done in the outskirts of the city, and from appearances would judge that the yards, streets, and neighboring unsettled territory serve as a dumping ground.

The population is variously estimated at from 60,000 to 70,000. The former I believe to be a safe estimate. The last census taken was in 1890, when it was about 55,000. Of these there are about 100 French, 100 Germans, 75 English, and 50 Americans. Italians form the greater part of the foreign population, followed very closely by Spaniards, Colombians, Chileans, and Peruvians, in the order named. There are very few negroes here and only 73 Chinese.

The people are hard working, sober, industrious, and cleanly.

Sewers.—It can almost be said that Guayaquil has no sewerage system. It is true that many years ago a kind of sewer was laid. This consisted principally of subsoil drains, inclosed with rock and stone. In some instances the four sides were thus incased, but in the majority the soil itself served as the floor, and the sides and top were inclosed. To-day no one seems to know just exactly where these are, nor through what streets they run. Where they are known to exist, the houses supplied with modern water-closets connect, except on the Malecon (the street fronting the river), where the houses connect directly with the river by means of iron pipes. The present sewerage system is a menace to the health of the city. During the wet season, when there is a heavy rainfall, the sewers are continually flushed by the waste water and kept clean, but during the dry season, when there is no rain, and when consequently there is insufficient water to flush them, the odors which arise often through the water-closets are very foul and obnoxious.

During this season the traps are cemented, in order to prevent these odors from pervading the city. However, as all of the drains empty directly into the river in front of the city onto a mud bank, this precaution is not attended with very satisfactory results.

Water supply.—Until 1891 the water used for every purpose was obtained from the river thus polluted. The deaths among children and the number of enteric disorders among all classes prior to that time were, I understand, appalling. However, Guayaquil has now an excellent water supply. This was installed in 1891.

The water comes from a mountain fall at the extreme south of the mountains of Chimbo, about 92 kilometers east of Guayaquil, and 300 meters above the level of the sea. It is far removed from human habitation and free from any possible infection.

It is conducted from Agua Clara, its source, to Guayaquil in large iron pipes, and gives a daily average supply of 79 liters per capita. By a chemical analysis at the municipal laboratory of Paris, it is classed as "first quality." All the houses are not supplied directly with this water. Those which are not obtain the water from public hydrants and keep it in tanks or barrels.

I copy a report of deaths among children under 5 years of age for one year preceding the year in which it was installed and one year after the present water was used:

	1890.	1891.	1892.
Births	2,683	2,749	2,540
Deaths	1,443	1,114	961

ICE FACTORY.

There is a well-equipped ice factory here, which supplies ice at 5 cents (2½ gold) per pound to the public. It is situated at the foot of Las Peñas, and all waste water is drained into the river. The water used in the manufacture of the ice is the drinking water from Agua Clara, by which the city is served. The ice is pure.

The Malecon.—This is the street on the water front. It is paved from Las Peñas to Olmedo avenue. This is by far the handsomest street in Guayaquil, but the location of a mud bank along its entire length and the deposit of fecal and waste matter by pipes which lead from the houses and streets to this bank make it a rather disagreeable locality when tide is out. A low stonewall separates it from the river. Extending about 200 feet from shore is this bank of black mud or silt. It was proposed once to move the wall out and fill up the bank to the river's edge, but I understand that the residents of the Malecon, fearing the erection of houses on the new ground, which would obstruct their view of the river, objected so strenuously that the plan was abandoned. This would undoubtedly contribute very much to the health of the city, as the drains now existing would empty directly into the river.

The market is also situated on the Malecon. It is an old dirty structure, insanitary and unclean, which has strangely escaped the various big fires that have swept around it.

The fruit, vegetable, and fish markets are also on this street, and the mud bank receives contributions from each.

Santa Ana, El Carmen, and Manicomio are hills at the northern extremity of Guayaquil. It was on Santa Ana that the city was first built, but this was in later years deserted and the city built in the swamp land. These hills, really the most suitable part of this section for residences and which offer excellent advantages for drainage, are given up to a few huts of the very poor and to the location of the hospitals.

Hospitals.—The Military Hospital is a large, well equipped, well ventilated building, excellently located on the top of Cerro de Santa Ana. The waste material and waters from this building are conveyed by pipes to the river, where they empty.

Neither mosquito bars nor screens are used either in this or the general (civil) hospital, which is situated on the south side of Santa Ana, near Cerro del Carmen. This hospital is new and is not yet entirely completed. It also is well equipped and supplied with excellent ventilation, light and air space. The wards are kept very clean and neat. The sewage from this building is conducted by a square surface drain along the foot of the hill to the Malecon, where it is deposited on the mud bank. I am informed that neither yellow fever nor smallpox is treated in these buildings, while a special tuberculosis hospital is provided at the foot of the Manicomio for tuberculous patients. A new-made dirt road runs around the Manicomio, past this hospital, to the building in which yellow-fever patients are treated.

The yellow-fever hospital is a new venture. It has been put in operation since my arrival. While not perfect it is a very good beginning. The windows and doors are all screened and every precaution is taken to prevent the ingress of mosquitoes. There are booths supplied for patients and also a suspect ward at the extreme end of the building.

As soon as a patient is reported suspected he is removed to this building, and when a positive diagnosis is made, if it is yellow fever, he is placed in the yellow-fever section and his quarters are fumigated. As I have said, the arrangement is not perfect, but the local board of health is working under the very great disadvantage of being almost entirely without funds, and this attempt is at least a step in the right direction.

Fronting these last two hospitals is a wide expanse of lowland which is often overflowed by the Estero Salado. I am told that it is almost entirely covered by water during the wet (winter) season. All the sewage from the tuberculosis hospital empties into this bottom and is carried to the Estero Salado, which is used as a bathing place.

Between these two hospitals is located the new cemetery, where those who die from contagious or infectious diseases are buried. A municipal law prohibits exhumation of a corpse in less than two years from date of burial, without reference to the cause of death.

The slaughterhouse.—This is located about 3 miles south of the city, on the river bank. It is suitably located and is kept very clean. A veterinarian examines all cattle before they are killed, as well as after the meat is dressed. The beef supplied is of a superior quality.

River system.—The river Guayas is the Mississippi of Ecuador. It begins as a small mountain stream in the Andes, and takes the name of Guayas just below the city of Babahoyo, where it connects with a river of that name. Below Guayaquil its volume is increased by the Taura, Naranjal, Balao, Tenguel, Rompido, and Santa Rosa rivers. A few miles below the junction with the Santa Rosa, and about 50 miles from this city, it empties into the Gulf of Guayaquil.

Opposite this city the river is about 2 miles wide. At high tide deep-draft vessels could come alongside a wharf, were one here. The wharf in use is an old wooden one, built many years ago, and can not supply berths for large vessels. These, therefore, anchor in midstream, where they are comparatively free from mosquitoes. The river steamers and smaller sailing craft moor alongside this wharf and small piers at different parts of the river front. The current is distinctive. It is very rapid and very strong, and runs sometimes 6 or 7 knots an hour.

At the mouth of this river where it empties into the Gulf of Guayaquil, is the Island of Puna. This island is admirably located for a quarantine station, as it commands the entrance to the entire infectible territory of Ecuador.

The Babahoyo, navigable for about 80 miles, drains a large territory of rich and fertile land in the heart of the cocoa region. Above the city of Babahoyo, the Guayas is called the Caracol, and runs through the richest section of the Republic. It receives the waters of numerous mountain streams. From this point it is navigable in winter for about 105 miles.

The Daule River, which unites with the Guayas a few miles north of Guayaquil, rises in the northern part of the Province of Manabi, drains that entire Province, and brings the towns along its course in touch with Guayaquil. It is navigable during the winter season to Balzar.

Neighboring provinces, villages, and coast towns affected by yellow fever.—In a description of these places I shall confine myself strictly to those which show by their past history that yellow fever can be introduced and spreads.

Posorja, El Morro, Chanduy, and Santa Elena are in the province of Guayas, and have each a population of about 500. These are small villages situated on the Gulf of Guayaquil and on the coast. They are called health resorts. Residents of this city go there in order to escape the sickly (winter) season. The climate is said to be similar to that of northern Peru. These villages produce nothing, and the inhabitants earn their living by fishing and cutting wood. They are poor in agriculture and have no river systems. In February and March torrential rains occur. The water for drinking purposes is caught in very large cisterns. In these places also are very old wells which are never cleaned. These towns are connected with Guayaquil by river steamers and small craft.

Babahoyo has a population of about 3,000. It is the capital of Los Rios province, and is about 36 miles, six hours by river steamer, northeast of Guayaquil. This is the first village on the old route from Quito, and is the center of a vast commerce which finds its way to Guayaquil. Babahoyo is built on low, swampy land, level with the sea. During the wet (winter) season it is entirely overflowed. Travel in the city is then done in canoes, which go up alongside the houses. Babahoyo is important because it is a kind of depot for the interior products, whence they are shipped to Guayaquil. From a sanitary standpoint it is important because of the continual movement of the people from the interior to this town, which has several times been visited by serious epidemics of yellow fever, of which I shall treat later. It was attempted to move the town, several years ago, to the opposite bank, which is much higher and never overflowed.

A bridge connects the old and new town, but in 1901 this new part was destroyed by fire. This is being rebuilt, however, and eventually the old site will be deserted. Malaria prevails here throughout the year. Humidity and heat are excessive. The wind is nearly always from the north. The city is without sanitation, and the houses are overcrowded. Thus with its constant supply of new material of natives from the interior it is an important factor in the spread of yellow fever once the disease has gained entrance.

Yellow fever passes over the villages and farms between Guayaquil and Babahoyo, although they are inhabited by natives who contract the fever if they come to this city during its prevalence. Machala and Santa Rosa are small towns in the province of El Oro. They have a population each of about 2,500 and are connected with Guayaquil by a line of river steamers. These places are without sanitation and have about the same situation as Guayaquil.

Manta is a small town of about 1,000 inhabitants, situated on the seacoast in the Province of Manabi. It is dry and considered very healthy, but in common with the whole Province of Manabi has suffered repeatedly from yellow fever.

Railroad system.—The Guayaquil and Quito Railroad, which is to connect this city with the capital of the Republic, is at present completed only to Guamote, a distance of about 112 miles. Along the line of this road are Yaguachi, Milagro, and Naranjito, where yellow fever can be introduced. The road runs through a fertile country and intimately connects this city with the interior.

Steamship lines: The steamship system is divided into ocean and river steamers. The principal lines of the ocean steamers are the Pacific Steam Navigation Company and the Compañia Sud Americana de Vapores. These ply weekly between Valparaiso and Panama, stopping at all the intermediate ports on the Chilean and Peruvian coast as far as Guayaquil, which is the last stop before reaching Panama. These steamers are well equipped and in good sanitary condition. They are often subjected to a harassing and oppressive quarantine, which the authorities deem necessary in order to keep out invasion of quarantinable diseases from ports both north and south. While preparing this report I have received notice that a rigid nonintercourse quarantine has been declared by the board of health of this city against all Peruvian ports. This is because of the report by the Ecuadorian minister in Lima that bubonic plague is present there and is increasing.

The necessity for a nonintercourse quarantine is explained by the lack of facilities to disinfect vessels here. A disinfecting plant (Clayton machine) is in course of erection, but as all parts have not arrived, the work is at a standstill.

Very little cargo is brought by the steamers from Peru to this port, while hay and flour are the principal imports from Chile. Freight, however, for Panama, or in transit across the Isthmus, is more important. From Chile ore is the principal export, while hides from Callao and cotton come from other Peruvian ports.

The Pacific Steam Navigation Company has also a line of coasting steamers which ply between Panama, Guayaquil, and intermediate ports. These leave here every other Saturday and take ten days to make the trip to Panama. They take no passengers or cargo for the terminal ports, except as at present, when this city declares a nonintercourse quarantine with ports south. Then the steamers which touch at those ports go direct to Panama without touching here, and the coasting steamers carry all passengers and also cargo.

There are several lines of river steamers which ply between the various river towns of the Guayas River system and Guayaquil.

Several tramp steamship lines also operate between here and foreign countries. Among these are the Lamport and Holt Company and the Gulf Line. Both of these companies are English. The Kosmos is a German line and plies between Hamburg and San Francisco. This line runs three steamers every two months. Merchants Line, an American steamship company, flying the British flag, plies between New York and Guayaquil. All of these steamers stop at ports along the Chilean, Peruvian, and Ecuadorian coasts, and bring passengers and cargo. Sailing vessels also come to this port, and both bring and carry cargo. The following tables will show the movement of deep-sea vessels in this port from January, 1903, to the present.

TABLE A.—*Ocean steamers, 1903.*

	Arrived.		Sailed.	
	Steamers.	Passengers.	Steamers.	Passengers.
Panama	56	424	65	377
Intermediate ports		597		522
Valparaiso and intermediate ports	42	683	40	504
San Francisco	9	66	11	11
New York	6	....	6	35
Los Angeles, Cal	1	27	....	....
All other ports	22	105	16	88
Total	136	1,902	138	1,537

TABLE B.—*Ocean steamers, January and February, 1904.*

	Arrived.		Sailed.	
	Steamers.	Passengers.	Steamers.	Passengers.
Panama	9	85	8	93
Intermediate ports	4	278	4	215
Valparaiso and intermediate ports	8	213	9	220
San Francisco, Cal	3	12	5	9
New York	2	5	1	
All other ports	5	6	5	
Total	31	599	32	537

TABLE C.—*Sailing vessels, 1903-4.*

	Arrived.	Sailed.
Panama	3	2
San Francisco, Cal	1	
New York, 1904	1	
All other ports	19	17
Total	24	19

Imports, 1903, 36,000 tons; exports, 1903, 35,000 tons.

A study of the exports for the whole Republic during the past thirty years shows an increase of 10,000 tons for each period of ten years.

Board of health.—This is composed of 7 members, of which the chief of police and captain of the port are ex officio members. The former is chairman. It is a political body, and has full jurisdiction over municipal sanitation and port quarantine.

The regulations, a copy of which is inclosed, are models of precision, but are not enforced. Much of this is due to the impecunious condition of the board. Most of the members show a desire to accomplish some sanitary reforms, and are willing to receive suggestions and act on them as far as the funds at their command will allow.

Vital statistics.—From a comparative standpoint these are almost worthless. No reliable data can be obtained for any considerable period. The big fire is generally given as the excuse. It seems to be true that many of the records which did exist were destroyed in the great fires of 1896 and 1902; but those that have been gathered since are often useless because of vagueness. Thus we see reported daily fever, colic, violent, as causes of death, while many reports make no mention of any cause.

It is an absolute impossibility to obtain the number of cases which occur of any given disease. Only deaths are reported, though a law exists making it compulsory for the attending physician to report every case of quarantinable disease. The present chief of police has introduced many improvements and has expressed a determination to have better records kept. This is a very important office, much more so than that of chief of police in American cities. The value of vital statistic records here depends entirely on the incumbent of that office and the care he takes in their collection and preparation.

Quarantine.—This is a service of detention. No facilities exist for fumigating a vessel or cargo. Vessels arriving from any foreign port stop at Puna and are inspected by a physician before they can proceed up the river. The inspection is of a very superficial character and with such as I saw practiced any disease could slip by. If a vessel comes from a healthy port it is allowed to proceed up the river, where it is again examined. If, however, from a port where a quarantinable disease exists it is detained a few days and then allowed to come to the city. No attempt is made at fumigation. Recently all steamers from Callao were detained seventy-two hours and then allowed to proceed to the city. When the authorities here become alarmed at the condition of any foreign port they establish a nonintercourse quarantine against that place. This is the case at present against all Peruvian ports, because of the reported existence of bubonic plague in Lima. The board of health hopes at an early date to have in operation a fumigating plant, Clayton apparatus, with which they will fumigate all vessels and cargoes coming from ports where quarantinable diseases exist. The service will then be one of fumigation instead of detention, and I am informed no notice will be taken of how recently a vessel may have left an infected port. The fumigation will be by sulphur dioxide under pressure.

Disposal of garbage.—Generally speaking this is done by burning, under direction of the board of health. All garbage is collected in flat cars and wagons and carried to the bank of the Estero Salado, where coal oil is poured over it and ignited. During the wet (winter) season this is rather a difficult undertaking and imperfectly done. The board of health is considering the purchase of a crematory.

Health conditions.—What is the health of Guayaquil? This is an important question around which necessarily gathers much interest. The reports which have gone out concerning this section have, I am convinced, been very much exaggerated and give to this city and country a much blacker record than facts will substantiate.

Each critic has taken a few phases or items which have come to his attention as a fair example of the whole condition, and without proper investigation proceeded to disseminate abroad ideas which are as false, when applied to the whole city and section, as they are prejudicial to commercial and health interests. Thus no mention is made of the fact that the annual death rate of this city, whose population is estimated at 60,000, represents very nearly the death rate of the entire surrounding territory, with a population of nearly twice that number. People from the neighboring villages and farms in the provinces of Guayas, El Oro, and Los Rios are sent to Guayaquil for treatment either in hospitals or with friends here, and do much to increase the mortality record.

Another very important fact which goes unmentioned is the division, I might call it, of mortality in the city proper. Within the newer or rebuilt section and in a contiguous part of the old section the health of the residents is exceptionally good and compares very favorably with that of a number of our own Southern cities; but in the outskirts of the city and in those parts of the old town bordering it, where the streets are low, the sanitary conditions foul, and the houses built without reference to hygienic principles, the mortality is very great and supplies a majority of the deaths recorded.

Remove those diseases which recent investigations prove are preventable, such as malaria, yellow fever, and some enteric diseases, and the health record would be very good. Even under the existing conditions the mortality is not, I believe, as great as, certainly no greater, than in Progreso and Merida, Yucatan, Bocas del Toro, in the Republic of Panama, and Limon, Costa Rica. There is this advantage, too, in favor of Guayaquil—the authorities here recognize the conditions and show every desire to improve them, whereas those in the places I have named, while recognizing the condition, view it with apparent indifference. In discussing the health of a section the latitude, elevation, distance from the sea, and prevailing winds form important items. Continued high temperature and humidity change the clinical picture of diseases so that those which are very mild here are of serious consideration in other countries. For instance, scarlet fever and diphtheria are both classed as mild diseases in the Tropics. It must also be borne in mind that "the tropical zone is one vast incubator, in which the conditions of moisture and heat are perfect for the riotous growth of an enormous bacterial flora, the classification and identification of which has just begun."

Mosquitoes.—The stegomyia fasciata and anopheles are distributed throughout this section in varying numbers. Their distribution corresponds directly to the health of the city. Within the improved or new parts very few are found, although I have taken every opportunity to observe them. In the outskirts of the city they are much more numerous. The mortality among children is very great. I subjoin a table showing deaths from all causes in children under 5 years of age for the year 1903.

TABLE D.—*Deaths from all causes in children under 5 years of age, 1903.*

Diseases.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Athrepsia						1	2					1	4
Asphyxia	12	10	19	17	12	20	22	16	14	8	5	4	159
Asphyxia by immersion	1												1
Angina		1			1				1		1		4
Asthma									1				1
Anæmia			4				1	1		2			8
Abscess		1			1						1		3
Attack, cerebral		1											1
Affection, heart				3	1			3	1		1		9
Bronchitis	11	12	7	8	10	2	6	2	6	2	5	11	82
Burns								1					1
Croup	12	14	21	8	2		3	3	4	5	3	3	78
Colic, intestinal												1	1
Contusions								1					1
Consumption	1	1			1							2	5
Colic	1	2		2	6	3	3	4	1	2	6	1	31
Colic, infant			1	1			1			2			5
Cholerine		1		1		1	1				2		6
Cancer					1								1
Cachexia											2		2
Cholera, infantile	2	2				1	1				1		7
Cystitis				1									1
Dysentery	8	6	4	4	1	5	8	1	2		1	1	41
Debility		1			3				1	2			7
Diphtheria												1	1
Diarrhea	2	3	1	1									7
Dropsy				1									1
Enteritis		3	1		1	1	1		1	1			9
Entero-colitis		1						1					2
Epilepsy	9	4	2	4	1	4	3	1	1	2	2	2	35
Erysipelas						1							1
Fevers:													
Unclassified	14	34	45	38	39	32	22	22	23	24	30	35	358
Pernicious	13	22	13	11	5	6	12	8	5	5		3	103
Infectious	4	11	2	6	2	1	4	2	2				34
Gastric	4	1	2	2	1	4	5						19
Paludic	1	1	2	1		2		1					8
Yellow	2		1		2								5
Cerebral	5	2		3	2	2	1						15
Grippal			2										2
Typhoid			1										1

TABLE D.—*Deaths from all causes in children under 5 years of age, 1903*—Continued.

Diseases.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Grippe	......	......	9	4	......	1	......	......	1	......	2	......	17
Gastritis	......	......	......	......	......	......	......	1	1	......	1	3	6
Gastro-enteritis	1	1	3	3	......	......	1	3	2	4	4	1	23
Hepatitis	......	1	2	......	......	......	......	......	......	......	1	......	4
Hereditary syphilis	......	......	......	......	......	......	......	......	......	1	......	......	1
Infection, intestinal	......	......	2	1	......	1	......	1	......	......	......	......	5
Bright's disease	......	......	......	......	......	1	......	......	......	......	......	......	1
Measles	......	......	......	......	......	......	......	......	......	1	......	......	1
Meningitis	6	1	2	3	3	1	......	5	4	1	2	2	30
Marasmus	......	......	......	1	......	......	......	......	......	......	......	......	1
Nephritis	......	......	......	......	......	......	......	......	......	......	1	......	1
Pneumonia	5	6	2	......	2	3	1	1	3	5	2	5	35
Paludism	1	......	......	......	3	1	......	1	......	......	......	......	6
Rachitis	2	1	2	......	2	......	1	......	......	2	......	......	10
Scurvy	......	1	......	......	......	......	......	......	......	1	......	......	2
Stomach obstruction	......	1	......	......	......	......	......	1	......	......	1	2	5
Scrofula	1	......	......	......	......	......	......	......	1	......	......	......	2
Tuberculosis	......	1	1	5	2	7	8	......	......	1	1	2	28
Tetanus	13	14	8	8	4	4	2	5	2	6	7	7	80
Traumatism	......	......	......	......	......	......	......	......	......	......	......	1	1
Ulcers	......	......	......	......	......	......	......	......	......	1	......	......	1
Variola	......	......	......	......	......	......	4	1	......	......	......	......	5
Worms	......	3	......	......	......	......	......	......	......	......	1	4	8
Unnamed	2	......	......	4	......	1	......	2	1	......	1	......	11
Total	133	164	160	141	108	106	113	88	78	78	84	91	1,344

The diseases which prevail here are malarial affections, yellow fever, tuberculosis, and enteric disorders in the order named.

Malaria.—Under this head I include the diseases reported as paludic, paludic cachexia, pernicious fever, and paludism, and from conversation with several physicians I believe that most of those reported "fevers" may also be included. No one can live here a month without recognizing the cause of these. The numerous breeding places offered mosquitoes by the abundance of water around the city furnish an explanation, intimately associated with which is the indifference of the people of the poorer classes in the outskirts of the city, which furnish by far the greater percentage of the deaths, to taking any precautions against these insects.

Pernicious fever, as the name implies, is by far the gravest type of this disease. It is attended by continued hyperpyrexia, anorexia and nausea. Cephalalgia is often present. The pulse is very quick and feeble. This disease is rapid in its course. In the very young it is frequently attended with convulsions. Quinine hypodermatically is the sine qua non. The attack terminates in twenty-four to forty-eight hours.

Tuberculosis: This is very common and here tends to chronicity. The precautions taken to eradicate it or prevent its spread are very inadequate. The ease with which perspiration is produced, the rapid evaporation, and the opportunities for the bacilli to spread because of the total absence of sanitary regulations, are causative factors.

Enteric diseases: In this list I include those reported as intestinal colic, dysentery, enteritis, intestinal fever, gastric fever, and gastro-enterocolitis. The insanitary condition of the places where these prevail, the possible infection of the water kept in barrels or tanks, and the general uncleanly condition of the outskirts of the city explain their prevalence.

Smallpox: This is now of very rare occurrence here. Time was when it swept this section, but in no country that I have visited have I seen such thorough education of the masses to the efficacy of vaccination. Even among the most ignorant classes this preventive is recognized, and children are brought to the municipality to be vaccinated.

Yellow fever: I mention this disease last, although from an international sanitary standpoint it is of prime importance.

In preparing this section of the report I am indebted to Dr. Cesar Borja, president of the municipality, who has furnished me with records and notes of very great interest.

It is remarkable with what unanimity the people and records agree in giving to Panama the blame for having introduced this disease here. Although the first authentic record of yellow fever is in 1740, Padre Juan de Velasco refers to a general pest which "cruelly punished the towns of the Guayas" in 1589 and notes that in consequence of this disease the strong race of the Huancavilcas, whom Pizarro found here when he founded the city of Santiago de Guayaquil in 1530–37, was almost entirely extinguished. He does not say what was the character of this disease. It may have been yellow fever. Commercial intercourse was already at that time established between Guayaquil and Panama, as well as indirectly with the West Indian Islands, and it is possible that yellow fever, which eighty years before had spread over those islands, was introduced by the Spaniards. That it was not smallpox is certain, because he refers to that later on and speaks of several epidemics which occurred in Guayaquil and the neighboring territory.

The first historic epidemic of yellow fever in this town, however, occurred in 1740. Of that epidemic we have the account of La Condamine and others. Don Jorje Juan and Don Antonio de Veloa mention it in the following paragraph: "Vomito Prieto (black vomit) was also experienced in Guayaquil for the first time in 1740, when the navy arrived, having left Panama on account of the war and to secure the treasure of the interior provinces. Many people of the navy died, among the foreigners, and some natives, although very few. The occasion and circumstances of this accident force the belief that it was introduced by the same navy having been infected in Panama." From that date it is reasonable to suppose that yellow fever has existed here, where the conditions for its growth were so admirable, more or less ever since, although the records at my command show only repeated epidemics at varying periods.

That very few natives were affected with this epidemic is significant. If the disease were not already endemic their immunity is inexplicable. It would rather indicate that the pest referred to as having been here in 1589 was yellow fever.

In 1842 occurred the first great epidemic, of which many records remain. There is nothing left to show that yellow fever occurred or remained between 1742 and 1842, a period of one hundred years.

Even the memory of the first invasion seems to have disappeared. In this second invasion natives and foreigners were attacked alike. The press of that time and many official documents now extant furnish abundant data. Doctor Mascote, who died at a very advanced age a few years ago, records that the vessel *Reina Victoria* arrived here August 31, 1840, from Panama, with a case of yellow fever on board.

This disease did not spread at once. During September a few cases occurred in the extreme southern part of the city and remained undiscovered for several weeks.

In October it began to invade the central part of the city and it is recorded that between October 1 and 26 thirty-six members of the most prominent families in Guayaquil died. From that time it spread like wildfire over the city and the neighboring provinces. In the Province of Guayas, with a population at that time of about 50,000, fully 5,000 people died. Guayaquil furnished nearly 85 per cent of this number. It was also remarked at this time that nearly all negroes and drunkards, many women, young children, and old people were immune. The Province of Esmeraldas was the only seacoast section which escaped nor has yellow fever ever occurred there. This province is in the extreme northern part of Ecuador on a line with Colombia.

From the western part of the Pichincha to the ocean it is covered with dense woods. It lacks high mountains and is not very elevated. The climate and vegetation are similar to that of the Amazon region of Ecuador; the houses are not overcrowded; the air space is plentiful; the villages are widely separated, and the traffic between them is small. But the traffic with Guayaquil and the outside world has increased in late years, and it is a question how long this apparent inmunity will last. The intercourse with Panama is much greater and more direct than with Guayaquil. It is even claimed that yellow-fever patients from Panama have been taken on shore at Esmeraldas, and have either recovered or died without others contracting the disease.

The rivers of this province run in very deep beds, between high banks, over sand and gravel bottoms. They rise in the Andes, always run to the sea, and their currents are very strong. The waters are sweet and clear. No stagnant waters remain anywhere on land. Malaria, however, is endemic along the coast. The interior is considered very healthy.

No exact data can be obtained as to the mortality in Manabi, but in proportion to its population, I understand, it was much greater than in Guayas. The records of that time now obtainable mention as a remarkable fact that patients who contracted yellow fever in the coast towns fled to the elevated interior villages, but that the disease did not spread.

One of the cities which suffered most during the epidemic of 1842 was Babahoyo, while along the entire navigable length of the Daule River the infection spread with great intensity.

In the Gulf of Guayaquil and along the coast, the villages of Posorja, El Morro, Chanduy, Santa Elena, Manta, and others suffered greatly, as well as the provinces of El Oro and Los Rios, the principal towns of which are Machala, Santa Rosa, and Babahoyo.

For two years, from 1842 to 1844, yellow fever raged throughout the entire coast section of Ecuador, and gradually died out toward the end of 1844. It reappeared in 1853. Dr. Juan Capello, in a paper published in Lima in 1870, says that this fever was imported in 1853 from Guayaquil to Callao, where it spread over Lima and places on the Peruvian coast till 1854, and that sporadic cases occurred till 1856. The epidemic of 1842–1844 had the effect of reducing travel to Guayaquil of foreigners and people of the interior, and yellow fever seems to have skipped over a period of eight years, to 1852. This visitation lasted through almost all of the year of 1853. Fourteen years later, in September, 1867, it reappeared.

In the archives of the municipality the records of September 26, 1867, state that yellow fever "has appeared with great malignity." This time again Panama is blamed. It is claimed that the disease was introduced from there in a steamer belonging to an English company. A panic ensued, as many of the best-known people in the province, both natives and foreigners, died. The infection spread throughout the provinces of Guayaquil and Manabi, and was again imported to Callao and Lima, where it prevailed in epidemic form throughout the year 1868. I am told by an old resident who lived here during that epidemic that the mortality among the Italian colonies in Callao and Lima was very great, and that every steamer going north was crowded with passengers, especially Italians, leaving Peru. In the early part of 1869 the epidemic had disappeared from Ecuador. In 1877 a few cases of a very grave type appeared here, but did not spread epidemically. It was carried to the coast towns of Posorja, El Morro, and Santa Elena, however, where it did spread as a very malignant epidemic. The governor of Guayas, on May 10, 1878, requested that physicians and supplies should be immediately sent to El Morro, where yellow fever was causing great havoc.

A period of two years is supposed then to have intervened before the next visitation in 1880. From that time yellow fever has certainly been endemic here and has remained continuously. At times it has occurred with great malignity. In this endemic period the fires which have partly destroyed Guayaquil have marked the beginning of the more severe epidemics. Just before the epidemic of 1880 a disease occurred here which was called "la fiebre de la aduana" (the custom-house fever). Some believed this to be yellow fever, and attributed the cause to merchandise which arrived from the Isthmus wet and in bad condition. Toward the end of 1879 the wharves at Colon were destroyed by a cyclone, and vessels arriving from the United States and Europe were detained a long time. When railroad communication was reestablished between Colon and Panama, the merchandise referred to above was shipped to Guayaquil; shortly after the fever of the custom-house occurred. This is described as a very grave infectious fever which made violent progress. The temperature, at the onset 39° to 40° C., remaining between 38.5° and 38° C., was continuous, and generally ended in death within fifteen days.

One patient died on the twenty-first day of illness, while many died on the fourth or the sixth day. In all there was a hyperæmia of the skin, cephalalgia, vertigo, insomnia, epigastric tenderness and burning, bilious vomit, in some of a dark leek-green color, hyperuria, one case anuria, albuminuria, and toward the end hemorrhage from the nose, great agony, and more or less marked jaundice. In some cases there were false remissions of temperature within the first few days.

Quinine was tried, and, I am told, was found useless. A short time after the occurrence of this fever it was discovered that the sewers under the custom-house, into which the pipes from all the houses in the neighborhood emptied, were broken and altogether filthy. Doctor Borja, who contended that the disease was yellow fever, thus sums it up: "Perhaps the exhalations from that infectious focus itself produced the epidemic which I mentioned and not the damaged merchandise."

A few months later, in September, 1880, an epidemic of yellow fever appeared and continued with great force till June, 1884.

In July, 1880, the steamship *Puno* arrived from Panama with a case of yellow fever on board, in the person of a novitiate of the Society of Jesus, who came from France to enter the seminary at Quito. He developed the fever the day the *Puno* left Panama, and died in the general (civil) hospital in this city. The month previous, however, the records show that a Colonel Vascones died here of yellow fever. He came from the interior. Preceding this epidemic of 1880–1884, a disease existed very generally, called dengue, and it is probable that yellow fever had been here since the epidemic of 1877–78. It did not spread until September, 1880, and apparently wore itself out about June, 1884. In the first few months of this epidemic there were 1,000 cases recorded in the general (civil) hospital. It is impossible to obtain a record of the number of cases which occurred in the provinces of Los Rios, El Oro, and Manabi.

From June, 1884, to the end of the year 1886, yellow fever remained as an endemic, although I understand that the wet (winter) seasons were severe. In January, 1887, the disease broke out in epidemic form and claimed nearly 1,000 victims during that year.

From then till January, 1889, yellow fever remained endemic, when it apparently disappeared until July, 1891. No trace of the origin of the infection of that year can be obtained. It appeared among newcomers to this city. At that time, according to an official statement from Panama, no fever existed there and we are left to suppose that yellow fever either existed here and remained unrecognized or was introduced from some other port. From that date it increased steadily, and in 1894 there were over 800 cases. From this year to 1903 no records exist. From interviews with several physicians and old residents, however, it appears that until the early part of 1897 very few cases occurred. Officially only three occured during 1896.

In October of that year about one-fifth of the city was destroyed by fire and many people were left homeless and exposed to the inclemency of the weather. The winter (wet) season which followed was very severe. In December one case of yellow fever is known to have existed. From then it increased, and 1897 is reckoned as one of the great epidemic years, although no records exist, those of the period between 1896 and August, 1902, having been lost in another fire which occurred in July of .the latter year. In 1898 yellow fever seems to have subsided and sporadic cases occurred. This condition continued till November, 1902, when it appeared again as an epidemic. It is said that a young lady living in Quito arrived here from Panama in July with yellow fever. In the same month Guayaquil was again almost destroyed by fire, and the same conditions existed as after the previous fire. It was in December of this year that Hon. Thomas Nast, United States consul-general, died of yellow fever. This and the following year are spoken of as epidemic years. In 1902, from August to December, 88 deaths were recorded.

A study of Table F will show that 1897, 1900, and 1903 were the years of greatest mortality. The causes in the first two are impossible to obtain. The principal causes of death in the latter year will be found in Table G.

TABLE E.—*Cases of yellow fever treated in the general hospital in Guayaquil from January, 1881, to the same month, 1895.*

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1881	45	41	7	10	40	32	64	62	39	48	117	142	647
1882	47	42	33	35	34	17	25	16	12	70	146	262	739
1883	174	55	19	11	11	7	19	2	12	46	100	53	509
1884	25	104	80	54	46	8	......	2	1	......	......	......	320
1885	69	36	32	12	23	16	19	15	2	2	......	......	226
1886	8	15	......	......	......	2	10	14	20	21	9	84	183
1887	214	205	167	105	40	24	8	1	......	......	4	62	830
1888	84	60	43	40	35	23	21	16	11	......	10	21	364
1889	57	69	39	19	2	......	8	10	......	......	......	1	205
1890	......	......	......	......	......	......	......	......	......	......	......	......	......
1891	......	......	......	......	......	......	18	28	40	52	85	120	343
1892	124	93	57	35	25	18	12	9	......	10	1	19	403
1893	14	9	5	18	17	30	27	24	35	54	84	103	420
1894	117	67	84	74	64	76	39	40	45	44	70	98	818
Total	978	796	566	413	337	253	270	239	217	347	626	965	6,007

This table was furnished by Doctor Borja. Records for later years were destroyed, and it is impossible to find further records for these years. These were treated in one hospital and represent only a part of the cases which did occur. Of this number 2,475, or 41 per cent, died. A study of this table will show that the months of greatest severity are from November to April, with December and January in the lead, while June, July, August, and September are the healthiest months.

TABLE F.—*Total mortality from October, 1896, to April, 1904.*

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
1896	......	......	......	......	......	......	......	......	......	231	204	235	670
1897	257	375	507	339	337	403	292	265	224	195	185	196	3,575
1898	136	156	303	256	268	228	210	230	188	184	178	190	2,527
1899	243	300	345	222	234	276	225	197	182	203	173	150	2,750
1900	236	264	325	303	573	335	245	226	194	221	248	191	3,361
1901	222	289	333	381	338	225	306	281	229	252	190	......	2,946
1902	......	......	......	......	......	......	......	173	195	227	194	234	1,023
1903	382	411	358	313	253	241	246	216	203	184	212	213	3,232
1904	230	298	312	......	......	......	......	......	......	......	......	......	840
Totals	1,706	2,093	2,483	1,814	2,003	1,708	1,524	1,588	1,415	1,697	1,584	1,309	20,924

I compiled the preceding table from information gathered from several sources, and it may not be absolutely correct. It is, however, the only table in existence covering this period.

The data from October 6, 1896, to December, 1901, was found in a book in the United States consulate. Under date of October, that year, this note is made: "All previous records destroyed by fire."

There is no way to verify these figures for the above period, as the records in the city were apparently all destroyed in the fire of July, 1902. For the period from December, 1901, to August, 1902, no records can be obtained anywhere, and no mention is made in the books referred to above in the United States consulate as to the reason, but it is probably attributed to the same fire.

From January, 1903, to April, 1904, is copied from the books of the police. It is likewise impossible to classify the causes of the deaths from 1896 to 1901, as the consulate book, which is an abstract of the weekly sanitary reports, merely registers the total mortality for each week with such remarks under prevailing diseases as paludic fever, yellow fever, grippe, etc.

TABLE G.—*Mortality, with principal causes, for the year 1903.*

Disease.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Whooping cough	11	15	26	9	3	......	2	6	4	5	4	4	89
Fevers	25	45	61	55	50	48	29	29	31	41	44	47	505
Yellow fever	105	66	47	4	8	2	......	......	......	......	1	1	234
Pernicious	19	33	20	26	12	9	16	13	5	6	2	9	170
Infectious	10	21	10	17	9	7	6	7	2	......	......	1	90
Paludic fever	6	4	6	5	4	3	3	6	12	......	......	1	50
Cerebral fever	6	3	......	3	4	3	......	......	1	......	......	......	20
Gastric fever	6	......	2	2	1	4	5	......	......	......	......	1	21
Enteric fever	......	4	2	......	......	1	1	......	......	......	......	......	8
Meningitis	7	2	4	5	3	1	......	......	5	1	6	3	37
Smallpox	......	2	......	2	......	1	6	1	......	1	1	1	15
Tuberculosis	32	36	35	47	41	38	30	20	32	27	30	33	401
Tetanus	18	18	6	10	7	5	......	6	2	8	8	7	95
All other causes	137	192	139	128	111	119	148	128	109	95	116	75	1,497
Total	382	411	358	313	253	241	246	216	203	184	212	213	3,232

Of the total number of deaths 1,344, or 41.5 per cent, were among children under 5 years of age.

What is being done.—In this respect I might say very little were it not that I have been reliably informed of the financial condition of the board of health. Viewed from this latter standpoint, the board is doing a great deal. Since my arrival a special building has been established in which yellow fever patients are treated; houses in which cases occur are fumigated; suspicious cases are reported, and a general attempt, on a modified scale, is being made to destroy mosquitoes. Several thousand pamphlets on "Prophylaxis Against Yellow Fever," have been printed for general distribution in this city and contiguous territory. This is the extract published in the Public Health Reports of July 31, 1903, from a paper read by Dr. John Guiteras, before the first International Sanitary Congress, held in Washington, D. C., December 2–5, 1902. In order that it might reach a larger class it is also being published serially in El Grito del Pueblo. Everybody is requested to follow the suggestions in their respective neighborhood. This is a good beginning for popular education. If the people can be convinced that malaria and its allied diseases are preventable much good will result. I say malaria because, unfortunately, yellow fever is a subject of very small concern to the vast majority of natives.

Within the past fifteen years Guayaquil has somewhat improved. The houses are better built and have more air space and ventilation; the streets are broader, higher, and in the newer part of the city, well paved and clean, and a supply of pure water has been obtained. In all other respects the city is at a standstill. No improvement has been made in the sewers and no attempt to fill up the large territory of surrounding swamp land.

What will be done.—This is thoroughly problematical. The municipality has an income of about $200,000 (gold) for the specific purpose of sanitation and protection against fire. This is derived from a special tax on cocoa. All the money on hand has been invested in a plant for water to be used against fires.

What should be done.—Within Guayaquil is the best answer to this question. In the new or rebuilt section where improvements have been made in houses and streets and the containers for water are all protected the health is very good. In much of the old section and all of the outskirts of the city where the conditions are poor the mortality is very large. The whole city can be made healthy. To be kept so will be at the price of unremitting vigilance.

However good the sanitary condition of tropical cities, the introduction of infection and supply of new material, coupled with carelessness on the part of the local health boards, are alone necessary to induce an epidemic of yellow fever. What should be done then can briefly be stated thus:

(1) Enact and enforce rigid sanitary regulations. This can be done without any additional expense with the recommendations contained in "Prophylaxis against yellow fever" as the base.

(2) Sewer the city. This is both a financial and engineering problem, the former apparently by far the more difficult. The authorities here are very anxious to raise money and, if obtained, to build sewers. They say that they can guarantee an income of between $250,000 and $300,000 gold a year, and would place all kinds of legislative safeguards around it to secure the immediate commencement of the work. The engineering feature is one which received much attention many years ago. Monsieur Camilo Coiret, a French engineer, has furnished me with plans which he made for this purpose. There are two plans proposed. Both provide for a receiving reservoir on one of the hills of the northern end of the city, from which the water would be distributed to flush the sewers. The plans differ only as to the manner of securing the water. One plan provides for a canal to connect the Estero Salado and the Guayas River, with a dam at the narrowest part of the Salado, while the other pumps the water directly from the river.

In both the main sewer empties several miles below the city.

(3) Fill the low streets and lots. All plans and estimates to sewer the city have also been made in connection with paving the streets. The streets can, however, be very acceptably filled, not paved, at very little cost. The hills which surround Guayaquil on the north and west furnish a material, called cascajo (gravel), which makes an excellent filling. It is brittle, is secured with very little labor, becomes hard, and makes a very good street. If a coating of tar (procured at Santa Elena) and sand were placed over this and rolled the streets would become compact and impermeable. The lots could also be filled with cascajo.

(4) Drain and fill the swamps at the city's edge. This is a more difficult problem than the preceding one, but the cascajo will also answer admirably for filling.

(5) Establish a quarantine station at the entrance to the Guayas River where vessels, passengers, and cargo can be inspected, disinfected, or detained. Puna is excellently situated for such a station and it could be established with very little expense. It has a well-protected harbor where vessels can lie at anchor, while there is ample room on the island for the erection of a hospital, thoroughly isolated, to which the sick could be removed for treatment.

The history of yellow fever in Ecuador proves conclusively that it is Guayaquil from which the infection spreads to the surrounding territory because of the intimate communication between these places. The same observation would hold in all other infections. Therefore to establish such a station is an essential part of any intelligent sanitary effort.

The area of the city is 3,655,900 square meters, 937.65 acres, without counting the Quintas Pareja and Luque. The streets contain 94,418 square meters. There are eight sewers, kind described under separate caption, known to exist. I have indicated their location and extent by a heavy blue line on a plan of the city which is forwarded with this report.

GERMANY.

Report from Berlin—Plague and cholera in various countries.

Consul-General Mason reports, April 16, as follows:

Plague.

Egypt.—During the period from March 26 to April 2 there were registered in the whole of Egypt 62 plague cases (and 43 deaths), viz: In Suez, 1 case (1 death); in Dechneh, 1 case (1 death); in the district of Baliana, 22 cases (14 deaths); in Nag Hamadi, 13 cases (12 deaths); in Tahta, 11 cases (8 deaths); Samallut, 9 cases (6 deaths); Bibeh, 3 cases (no deaths); Girgeh, 1 case (1 death); Kuesna, 1 case (no deaths).

British India.—During the week ended March 19 there were registered in the Bombay Presidency 11,903 cases of plague (and 8,840 deaths), of which 943 cases (849 deaths) occurred in the city of Bombay; 184 cases (157 deaths) in Karachi; 85 cases (73 deaths) in Jamnagar; 33 cases (21 deaths) in Veraval, and 3 cases (3 deaths) in Broach.

British South Africa.—In Cape Colony during the week ended March 12, 3 cases of plague occurred in Port Elizabeth and 3 cases in Uitenhage.

Plague and cholera.

British India.—In Calcutta during the week ended March 12, 230 persons died of plague and 45 persons died of cholera.

Cholera.

Turkey.—According to Bulletins Nos. 10 and 11, there were registered in Bagdad between March 21 and April 3, 15 cases of cholera (and 17 deaths); in Bassorah, between March 20 and 31, 57 cases (and 56 deaths).

Death rate of Berlin and other cities.

The death rate of Berlin for the week ended April 2 was higher than it has been since the middle of January, amounting, calculated on the year, to 16.9 per 1,000 of the population, this being also considerably higher than the rate for the corresponding week of last year, in which it amounted to 13.8. In spite of this increase, however, one-half of the large German towns and cities showed more unfavorable conditions than Berlin—namely, Munich, Nuremberg, Stuttgart, Frankfort-on-the-Main, Cologne, Magdeburg, Breslau. On the other hand, the following cities showed more favorable figures than Berlin—viz, Hamburg, Leipzig, Dresden, Hanover, Rixdorf (with 14.8), Charlottenburg (with 14), Schöneberg (with 7.4). The mortality rate among infants rose from 3.4 per year and mille to 4.4, this being higher than the Hamburg rate, but considerably lower than the Munich figure. Acute intestinal diseases and acute diseases of the respiratory organs showed no important change, the former causing 35, the latter 83 deaths. Furthermore, the following figures were published: Influenza